CLAIMS

We claim:

1.   A method for exchanging objects between two computing entities in an object-oriented programming environment using a transport mechanism in which said data units are contained in files, each file defining a resource, each resource designed to contain a plurality of particular ones of said objects, said method comprising the steps of:

(1) providing a resource factory for building resources, said factory including a plurality of software modules for building resources from a data source, each said software module designed to build a resource of a particular type;

(2) responsive to a request for an object from a first computing entity, selecting a software module for building a resource of the type to which said requested object corresponds;

(3) building a resource for containing said requested object using said selected software module, said resource populated with information defining said resource, but not containing said requested object;

(4) inserting said requested object into said resource;

(5) transmitting said resource to said first computing entity using said transport mechanism; and

(6) providing to said first computing entity said requested object.

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2.   The method of claim 1 wherein, in step (4), only said requested object is inserted in said resource.

3.   The method of claim 2 further comprising the steps of:

(7) providing a reflection adapter factory for populating objects within resources, said factory adapted to provide software modules for populating objects, each said software module designed for an environment corresponding to a requested object;

(8) responsive to a request for a property of said object, selecting a one of said reflection adapters for the environment of the particular requested property;

(9) populating said object with said requested property; and

(10) providing to said first computing unit said requested property.

4.   The method of claim 3 wherein said object comprises a plurality of properties and step (9) comprises populating said object with all properties of said object that can be reflected.

5.   The method of claim 2 further comprising the steps of:

(10) prior to step (2), determining whether said first computing entity has stored a resource containing said object;

(11) if said first computing entity has stored a resource corresponding to said requested object, determining if said corresponding resource stored at said first computing entity contains said requested object;

(12) if said corresponding resource stored at said first computing entity contains said requested object, skipping steps (2), (3), (4) and (5).

6.   The method of claim 3 further comprising the steps of:

(13) prior to step (8), determining whether said first computing entity has stored said requested property;

(14) if said first computing entity has stored said requested property, skipping steps (8) and (9).

7.   The method of claim 3 wherein said transport mechanism comprises XML and said files comprise XML documents.

8.   The method of claim 7 wherein said objects comprise Java objects.

9.   The method of claim 8 wherein said files comprise XMI documents.

10.   The method of claim 9 wherein steps (4) and (5) utilize the Meta Object Facility of the Object Management Group specification to read an XMI document.

11.   The method of claim 8 wherein, in step (2), said information defining said resource comprises at least a package object of said resource.

12.   The method of claim 3 further comprising the steps of:

(15) prior to step (9), determining whether said selected reflection adapter has previously reflected said requested property;

(16) if said first computing entity has previously reflected said requested property, skipping step (9).

13.   The method of claim 1 wherein said data source for building said resources comprises a live system.

14.   The method of claim 1 wherein said data source for building said resources comprises a database.

15.   The method of claim 1 wherein said data source for building said resources comprises a document in a format other than a format of said transport mechanism.